Some Thoughts on the Alpha-Beta
(presented in living Times New Roman)

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HISTORY

Definitions

- abjad-(n) an alphabet comprised of consonants
- abugida-(n) an alphabet in which each letter is comprised of a joined consonant and vowel
- alphabet-(n) a system of writing in which each symbol represents a particular human facial sound
- logographic-(adj) a script in which each picture represents a word

Proto-Sinaitic/North Semitic

- ca. 2K BC
- developed to some extent from Egyptian (Hamitic) Hieroglyphics
- developed by Semitic workers (for Hamitic bosses) in the Sinai area
- ancestor of *almost all* modern alphabets (exceptions are Maldivian, Somalian, etc.)

Proliferation

Notable Descendants of the North Semitic

- Phoenician
  - -Greek
    - -Etruscan → Latin
    - -Cyrillic
- Aramaic
  - -Hebrew
    - -Cyrillic
  - -Sanskrit
  - -Arabic

Evolution of the Hebrew, Arabic, Cyrillic, and Latin

The Hebrew Alphabet

Kaf	Yod	Tet	Het	Zayin	Vav	He	Dalet	Gimel	Bet	Alef
כ ך	י	ט	ח	ז	ו	ה	ד	ג	ב	א

Tav	Shin	Resh	Qof	Tsadi	Pe	Ayin	Samekh	Nun	Mem	Lamed
ת	ש	ר	ק	צ ץ	פ ף	ע	ס	נ ן	מ ם	ל

Note: The chart reads from right to left.

The Arabic (Maghreb) Alphabet

alif	ا	a	zay	ز	z	qaaf	ق	q
baa	ب	b	siin	س	s	kaaf	ك	k
ta	ت	t	shiin	ش	$	laam	ل	l
tha	ث	*th*	Saad	ص	S	miim	م	m
jiim	ج	j	Daad	ض	D	nuun	ن	n
Haa	ح	H	Taa	ط	T	waaw	و	w
kha	خ	*kh*	Zaa	ظ	Z	haa	ه	h
daal	د	d	ayn	ع	'Å,'A,'I,'U	yaa	ى	y
thal	ذ	*dh*	ghayn	غ	g	hamza	ء	a,i,u 'a,'i,'u
raa	ر	r	faa	ف	f			

Evolution of the Hebrew, Arabic, Cyrillic, and Latin

Here is a link for an animated history of the Cyrillic Alphabet:

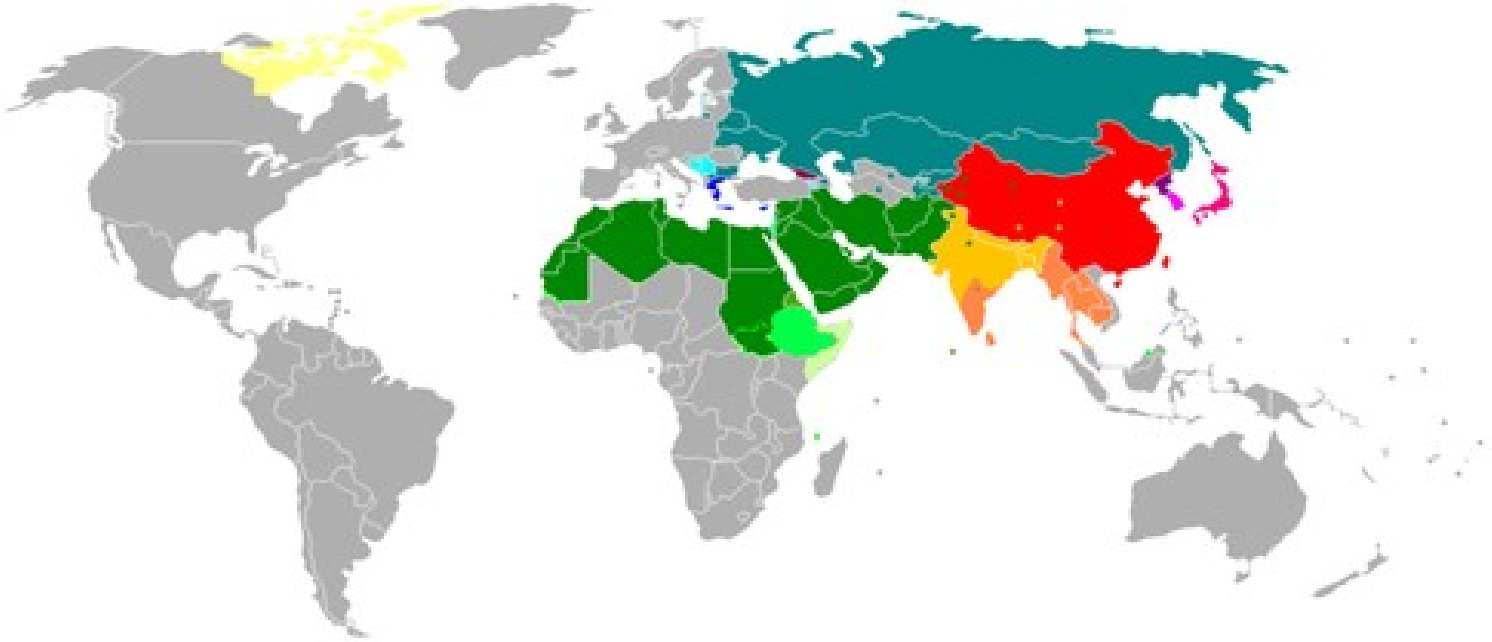
http://terpconnect.umd.edu/~rfradkin/greek2cyrillic-animate.html

Here is a link for an animated history of the Latin Alphabet:

http://terpconnect.umd.edu/~rfradkin/latin.html

Note the remarkable consistency of order … even in "strange" alphabets! In particular there seem to be about 4 groups that often remain together in order.

- A, B, C, D, E (H), F, G (Group 1)
- I, J, K (Group 2)
- L, M, N, O (Group 3)
- R, S, T, X(Group 4)



Code: **Alphabets:** Armenian, Cyrillic, Georgian, Greek, Latin, Latin (and Arabic), Latin and Cyrillic
Abjads: Arabic, Hebrew
Abugidas: North Indic, South Indic, Ge'ez, Tāna, Canadian Syllabic and Latin
Logographic+syllabic: Pure logographic, Mixed logographic and syllabaries, Featural-alphabetic syllabary + limited logographic
Featural-alphabetic syllabary

Note that no system dominates, and that many are descended from the North Semitic!

The distribution of Latin Worldwide

Here's what I mean about the Latin

Issues with the Latin and its descendants (at least for me)

- History vs. Pronunciation
  - p, ph, f (fat, phat)
  - s, sh (Beth Semesh)
  - b, v (Avril, Abril) (Beer Sheba)
  - t, th (Loth, Lot)
- Non-traditional sounds
  - clicks, whistles, snorts, etc.
  - Good work of the IPA (International Phonetic Alphabet)
- Shape vs. Sound
  - p and q (Latin)
  - ν and v (Greek)
  - Σ and E (Greek)
  - σ and o (Greek) (not the ending s)
  - r and Γ (Greek)
  - p and ρ (Greek)

Mathematical mixtures of Latin, Arabic and Greek

- Latin (or Roman) numerals
  - -Alphabetic counting systems
  - - Roman numerals
  - - Hindu-Arabic numerals
- Statistical use of Greek and Latin
- Mathematical Conventions

- Group 1 for constants and functions
- Group 2 for graphing in $\mathbb{R}^3$
- Group 3 for indices (with Group 2)
- Group 4 for variables

- Mathematical symbols from the Latin

- e, ∂, f, $\mathscr{F}$, $\mathscr{L}$, N, $\mathbb{N}$, $\mathbb{Q}$, $\mathbb{R}$, $\mathbb{Z}$, Z, etc.

- Mathematical symbols from the Greek

- α, β, Γ, χ^2, δ, ε, λ, μ, ν, π, ρ, Π, σ, Σ, τ
- Do you know the meanings of these letters?

Tracing the Normal Distribution (N)

Although the most important early contributor was Laplace, the most common way of writing the normal distribution--at least in the English literature--came from Gauss. C. F. Gauss's (1777-1855) *Theoria Motus Corporum Coelestium in Sectionibus Conicis Solem Ambientum* (*The Theory of the Motion of Heavenly Bodies moving around the Sun in Conic Sections*) *Werke 7* of 1809 was extremely influential. It presented the normal distribution in conjunction with the method of least squares.

$$\varphi\Delta = \frac{h}{\sqrt{\pi}} e^{-hh\Delta\Delta}$$

Using modern conventions for brackets and squares this would be written

$$\varphi(\Delta) = \frac{h}{\sqrt{\pi}} e^{-h^2\Delta^2}$$

Biometry (q.v.) appeared at the end of the 19th century. Karl Pearson (1857-1936) was responsible for most of the mathematical machinery. His principal innovation was a new measure of dispersion, the standard deviation (σ) and wrote

$$y' = \frac{c}{\sigma\sqrt{(2\pi)}} e^{-x^2/(2\sigma^2)}$$

where "*c* is the total number of units measured, or the area of the probability curve."

Tracing the Normal Distribution (N)

R. A. Fisher (1890-1962), the most influential statistician of the first half of the 20th century, changed the form of the normal distribution principally by presenting the case with *non-zero mean* as typical. Fisher learned the theory of errors as a student and in his first paper "On an Absolute Criterion for Fitting Frequency Curves" (1912, p. 157) uses the Gauss notation but with a slight change.

Fisher soon went over to the biometric notation (but without the *c* or *N*). He wrote the bivariate density in his 1915 paper on correlation (p. 508). When he next needed the univariate form he wrote "the chance of any observation falling in the range *dx* is

$$\frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-m)^2}{2\sigma^2}} dx$$

Fisher wrote the normal density like this until the mid-1930s when he replaced *m* with μ. The new symbol appeared in the 1936 (sixth) edition of the *Statistical Methods for Research Workers*.

$$fx(x) = \frac{1}{\sqrt{2\pi}\sigma} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$$

Some Interesting Related Studies

Efficiency Comparison of Languages

Discriminant Analysis on appearances of Letter Groups

Discriminant Analysis on Number assignment within Letter Groups

Really Good Websites

www.wikipedia.org

www.limfinity.com

http://terpconnect.umd.edu/~rfradkin/latin.html

http://www.roma.unisa.edu.au/07305/symbols.htm

http://www.ancientscripts.com/protosinaitic.html